REMARKS

By this amendment, claims 13, 18, 19, 24, and 27 are amended, claims 32-37 are added, and claim 17 is canceled. Claims 13-16, 18-19, 21-24 and 27-37 are pending.

The Examiner rejected claims 13-19, 21-24 and 27-31 under obviousness-type double patenting as being allegedly unpatentable over claims 1-9 of US 6,129,955 in view of Christie *et al.*

The Examiner rejected claims 13-18, 21-24 and 27-29 35 U.S.C. 112, first paragraph, allegedly because the disclosure is not enabling.

The Examiner rejected claims 13-24 and 27-29 under 35 U.S.C. 112, first paragraph, as allegedly not being enabled for any known "filler".

The Examiner rejected claims 24 and 27 under 35 U.S.C. 112, second paragraph, as allegedly being indefinite.

The Examiner rejected claims 13-19, 21-24 and 27-31 under 35 U.S.C. 102(e) as allegedly being anticipated by or, alternatively, under 35 U.S.C. 103(a) as allegedly being unpatentable over Papathomas *et al.* (6,129,955).

The Examiner rejected claims 13-19, 21-24 and 27-30 under 35 U.S.C. 103(a) as allegedly being unpatentable over Christie *et al.* (5,250,848) in view of Papathomas *et al.* (6,129,955).

The Examiner rejected claims 13-16, 18, 19, 21-24 and 27-30 under 35 U.S.C. 103(a) as

allegedly being unpatentable over Christie *et al.* (5,250,848) in view of McCormick *et al.* (5,215,860).

The Examiner rejected claims 13-16, 18, 19, 21-24 and 27-30 under 35 U.S.C. 103(a) as allegedly being unpatentable over Christie *et al.* (5,250,848) in view of Pujol *et al.* (5,143,785).

Applicants respectfully traverse the Examiner's rejections under 35 U.S.C. 112, first and second paragraphs, 35 U.S.C. 102(e) and 103(a) with the following arguments.

Obviousness-type Double Patenting

The Examiner alleges Claims 13-24 and 27-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over Claims 1-9 of U.S. Patent No. 6,129,955 (US '955) in view of Christie *et al.* Applicants respectfully traverse the Examiner's obviousness-type double patenting rejection on grounds that the combination of a secondary reference Christie *et al.* which teaches **thermal cure** of a cyanate ester with the claims 1-9 of a primary reference U.S. Patent No. 6,129,955 (US '955) that teaches a **photocured** polyepoxide is improper. The Examiner relies on claims 1-9 of Papathomas et al '955, as a primary reference, that claim a method for encapsulating a solder joint with a **photocured** composition comprising an epoxy resin, a silica filler **and a photoinitiator**" (emphasis added). Office Action page 8, Double Patenting. The Examiner further relies on Christie *et al.*, as a secondary reference, for modifying the primary reference teaching that "compositions comprising a cycloaliphatic polyepoxide and/or cyanate ester or prepolymer thereof are useful for providing a solder interconnection." Office Action page 8, Double Patenting. However, Applicants contend there would be no motivation for one skilled in the art to look to the teaching of Christie *et al.* because it teaches **thermal cure** of a cyanate ester,

unlike U.S. Patent No. 6,129,955 (US '955), wherein claims 1-9 claim "a method for encapsulating a solder joint with a **photocured** composition" (emphasis added). Office Action page 8, Double Patenting. Applicants respectfully submit that one skilled in the art encapsulating a solder joint with a photocured composition, as in claims 1-9 of U.S. Patent No. 6,129,955 (US '955) would not look to Christie *et al.* because Christie *et al.* teaches thermally curing the encapsulant. Therefore, the Examiner's double patenting rejection of claims 13-24 and 27-29 fails because it would not be obvious to one skilled in the art to substitute a cyanate ester compound for the polyepoxide in the compositions recited for use in claims 1-9 claimed in US '955 since the composition of Christie *et al.* is not **photocured.**

Even if it would have been proper for the Examiner to use the alleged teaching of Christie *et al.*, i.e., "compositions comprising a cycloaliphatic polyep oxide and/or cyanate ester or prepolymer thereof are useful for providing a solder interconnection,." the Examiner has not made clear why one of ordinary skill in the art would conclude that the invention defined in Applicants' Claims 13-24 and 27-30 are an obvious variation of the invention described by claims 1-9 of US '955 in view of Christie *et al.*, wherein Christie *et al.* teaches thermal cure and claims 1-9 teach photocure. See the Office Action page 8, Double Patenting. See also MPEP §804(II)(B)(1) Any obviousness-type double patenting rejection should make clear:

(A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and

(B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the

patent.

35 U.S.C. 112, first paragraph

The Examiner rejected claims 13-18, 21-24 and 27-29 under 35 U.S.C. 112, first paragraph, allegedly because the claims are not enabled by the disclosure. See the Office Action, page 4, Paragraph 1. The Examiner states "**a dispersed phase of particulate silica** is critical or essential to the practice of the invention, but not included in the claims" (emphasis added). Id. Accordingly, Applicants have amended claim 13, stating "A method for encapsulating a solder joint between an integrated circuit chip and a substrate, comprising the steps of: forming a composition that includes a photoinitiator, **a dispersed phase of particulate silica**, and a resin precursor, . . ." (emphasis added).

The Examiner rejected claims 13-24 and 27-29 under 35 U.S.C. 112, first paragraph, as allegedly not being enabled for any known "filler". Office Action, Page 4, Middle of Paragraph 2. Accordingly, Applicants have amended claim 13 stating ". . . **a dispersed phase of particulate silica** . . ." (emphasis added).

35 U.S.C. 112, second paragraph

The Examiner rejected claims 24 and 27 under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. According, Applicant has amended claims 24 and 27 for clarification.

35 U.S.C. 102(e)/103(a),

The Examiner rejected claims 13-19, 21-24 and 27-31 under 35 U.S.C. 102(e) as allegedly being anticipated by or, alternatively, under 35 U.S.C. 103(a) as allegedly being

unpatentable over Papathomas *et al.* (6,129,955). Applicants respectfully traverse the Examiner's rejection because both Papathomas *et al.* (6,129,955) and the current application are continuations of the same parent application (08/548,893). As such, Papathomas *et al.* (6,129,955) is not proper prior art under 35 U.S.C. 102(e)/103(a). The present Application is a continuation in part of the patent application serial number 08/874,220, which is a divisional application of the parent patent application serial number 08/548,893, filed October 26, 1995, which is now abandoned. In light of the foregoing, Applicants respectfully submit that claims 13-19, 21-24 and 27-31 are in condition for allowance under 35 U.S.C. 102(e) or 103(a) because Papathomas *et al.* (6,129,955) is not proper prior art under 35 U.S.C. 102(e) or 103(a).

The Examiner rejected claims 13-19, 21-24 and 27-30 under 35 U.S.C. 103(a) as allegedly being unpatentable over Christie *et al.* (5,250,848) in view of Papathomas *et al.* (6,129,955). Applicants respectfully traverse the Examiner's rejection of claims 13-19, 21-24 and 27-30 as being allegedly unpatentable under 35 U.S.C. 103(a) over Christie *et al.* (5,250,848) in view of Papathomas *et al.* (6,129,955) for the same reason Applicants traversed the Examiner's rejection of claims 13-19, 21-24 and 27-31 under 35 U.S.C. 102(e) as allegedly being anticipated by or, alternatively, under 35 U.S.C. 103(a) as allegedly being unpatentable over Papathomas *et al.* (6,129,955). In light of the foregoing, Applicants respectfully submit that claims 13-19, 21-24 and 27-30 are in condition for allowance under 35 U.S.C. 102(e) or 103(a) because Papathomas *et al.* (6,129,955) is not proper prior art under 35 U.S.C. 102(e) or 103(a) in that Papathomas *et al.* (6,129,955) and the current Application claim priority to the same parent application.

The Examiner rejected claims 13-16, 18, 19, 21-24 and 27-30 under 35 U.S.C. 103(a) as allegedly being unpatentable over Christie *et al.* (5,250,848) in view of McCormick *et al.* (5,215,860). Applicants respectfully traverse the Examiner's rejection because Christie *et al.* (5,250,848) in view of McCormick *et al.* (5,215,860) do not teach or suggest each and every feature of claim 13. Applicants submit that claim 13 claims "a method, comprising: . . . "providing an integrated circuit chip located above the surface of the substrate to form a gap between a bottom side of the chip and said surface of the substrate, **wherein a plurality of conductive leads project from lateral sides of said integrated circuit chip, said lateral sides not including said bottom side**; . . ." emphasis added). Applicants respectfully direct the Examiner to Applicants' Summary of the Invention, Page 4, Lines 13-22 that supports the providing the plurality of conductive leads that **project from lateral sides not including said bottom side**, of Applicants' claim 13. Applicants' Specification and FIG. 3 supports forming a gap "S" between the chips under surface and the substrate **11**. See Applicants' Specification, Page 7, Lines 14-19. The Examiner relies on Christie *et al.*, as a primary reference to "disclose a method for encapsulating C4 connections and pin heads (column 7, lines 1-16)." Office Action, page 6, last paragraph. The Examiner also relies on Christie *et al.* to teach that "compositions comprising a cycloaliphatic polyepoxide and/or cyanate ester or prepolymer thereof are useful for providing a solder interconnection." Office Action page 8, Double Patenting. The Examiner relies on the secondary reference, McCormick *et al.* (5,215,860), to teach "a method for thermal or **radiation** polymerization of **cyanate** monomers." Office Action, Page 6, Paragraph 3, Last sentence. The Examiner states "It would have been obvious to one skilled in the art at the time of the invention to substitute an organometallic catalyst and radiation polymerization for the

thermal catalyst and thermal curing in the method for curing a cyanate ester composition taught by Christie *et al.*, as taught by McCormick *et al.* in an analogous method using analogous cyanate monomer compositions." Office Action, Page 7, Second to last sentence of second paragraph. Applicants submit, however, that neither Christie *et al.*, nor McCormick *et al.* teach or suggest "a method, comprising: . . . "providing an integrated circuit chip located above the surface of the substrate to form a gap between a bottom side of the chip and said surface of the substrate, **wherein a plurality of conductive leads project from lateral sides of said integrated circuit chip, said lateral sides not including said bottom side**; . . ," (emphasis added), as in Applicants' claim 13. Instead, Christie *et al.* teach "The present invention provides an encapsulant that exhibits excellent wetting and coverage of the C4 connections as well as the pin heads **under** the device that are present" (emphasis added). Christie *et al.*, Column 2, lines 61-68, stating in part "In fact, the present invention makes it possible to achieve complete coverage **beneath** the chip" (emphasis added). See also FIG. 1 depicting cross sectional views of the chip carrier assembly of Christie *et al.* illustrating the C4 connections as well as the pin heads **under** the device. Applicants describe in the specification that, unlike Christie *et al.*, who provide an encapsulant that exhibits excellent wetting and coverage of the C4 connections as well as the pin heads **under** the device, the encapsulant of the present invention is photocured by positioning the encapsulant **under** a source of UV radiation, made possible because the encapsulant substantially surrounds the solder joint **connecting the leads projecting from the sides of the chip to the C4 connectors** as in Applicants' claim 13. See Applicants' Specification, page 9, Lines 6-27. Likewise, McCormick *et al.* (5,215,860) do not teach or suggest "a method, comprising: . . . "providing an integrated circuit chip located above the

surface of the substrate to form a gap between a bottom side of the chip and said surface of the substrate, **wherein a plurality of conductive leads project from lateral sides of said integrated circuit chip, said lateral sides not including said bottom side; . . .**" (emphasis added), as in Applicants' claim 13. Applicants submit that the encapsulant **under** the chip of Christie *et al.* in view of McCormick *et al.* cannot be photocured because the UV light would not penetrate the chip to "effect polymerization." Christie *et al.*, Column 6, Lines 45-49. Consequently, even if McCormick *et al.* teach photocuring a cyanate ester, Christie *et al.* in view of McCormick *et al.* do not teach or suggest "a method, comprising: . . . "providing an integrated circuit chip located above the surface of the substrate to form a gap between a bottom side of the chip and said surface of the substrate, **wherein a plurality of conductive leads project from lateral sides of said integrated circuit chip, said lateral sides not including said bottom side; . . .**" (emphasis added), as in Applicants' claim 13. In light of the foregoing, Applicants respectfully submit that claims 13-16, 18, 19, 21-24 and 27-30 are in condition for allowance under 35 U.S.C. 103(a) over Christie *et al.* (5,250,848) in view of McCormick *et al.* (5,215,860) because neither of the Examiner's cited prior art teach or suggest the invention of Applicants' claim 13.

The Examiner rejected claims 13-16, 18, 19, 21-24 and 27-30 under 35 U.S.C. 103(a) as allegedly being unpatentable over Christie *et al.* (5,250,848) in view of Pujol *et al.* (5,143,785). Applicants traverse the Examiner's rejection of claims 13-16, 18, 19, 21-24 and 27-30 for the same reasons cited to traverse the Examiner's rejection of the same claims over Christie *et al.* (5,250,848) in view of McCormick *et al.* (5,215,860), i.e. the Examiner's rejection fails because Christie *et al.* (5,250,848) in view of Pujol *et al.* (5,143,785) do not teach or suggest "a method,

comprising: . . . "providing an integrated circuit chip located above the surface of the substrate to form a gap between a bottom side of the chip and said surface of the substrate, **wherein a plurality of conductive leads project from lateral sides of said integrated circuit chip, said lateral sides not including said bottom side**; . . ." (emphasis added), as in Applicants' claim 13.

In light of the foregoing, Applicants respectfully submit that claims 13-16, 18, 19, 21-24 and 27-30 are in condition for allowance under 35 U.S.C. 103(a) over Christie *et al.* (5,250,848) in view of Pujol *et al.* (5,143,785) because neither of the Examiner's cited prior art teach or suggest the invention of Applicants' claim 13.

CONCLUSION

In summary, based on the preceding arguments, Applicants respectfully submit that all independent claims and dependent claims meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact Applicants' representative at the telephone number listed below.

Date: December 3, 2003

Gerald F. Dudding
Registration No. 52,835
Schmeiser, Olsen & Watts
3 Lear Jet Lane
Latham, New York 12110
(518) 220-1850